

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICANT: Steven P. NOLAN, Ph.D.

SERIAL NO.: 10/653,688

GROUP ART UNIT: 1626

FILED: 2 September 2003

EXAMINER: SHIAO, Rei Tsang

FOR: "Synthesis of 1,3 Disubstituted Imidazolium Salts"

ATTORNEY DOCKET NO.: A02194US (98016.23)

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AFTER FINAL RESPONSE

Mail Stop Amendment
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

This is a response to the Office Action dated 22 November 2005. A shortened statutory period was set to expire three months from the date of the action, making a response due by 22 February 2006. A Notice of Appeal was filed on 22 February 2006, and was received by the USPTO on 27 February. An Appeal Brief, required by 37 C.F.R. § 41.37(a), is due by 27 April 2006 (see 37 C.F.R. § 1.8(a)(2) and MPEP § 512 (Eighth Edition, Revision 2, May 2004)).

REMARKS

Claims 1-4, 6-12, and 15-20 were rejected under 35 U.S.C. § 112, first paragraph. Applicant respectfully traverses this rejection.

It is respectfully submitted that these claims comply with the written description requirement and the specification provides enablement for the claims. It is respectfully submitted that one of ordinary skill in this art could prepare an imidazolium salt using other diimine compounds and other specifics than those explicitly set out in the specification. The specific examples in the specification provide enough guidance that one of ordinary skill in the art could easily prepare other imidazolium salts using other diimine compounds. A patent applicant is not required to explain in great detail how to make all products that fall within the scope of his claims, nor is it necessary that one be able to make the products without some experimentation.

Appl. No. 10/653,688
Response dated April 21, 2006
Reply to Office Action of Nov. 22, 2005

A competent chemist of ordinary skill in this art will recognize that the real teaching of the present invention is a two-stage process performed at room temperature to convert diimine compounds to imidazolium salts. A competent chemist of ordinary skill in this art will recognize that one could start with diimine compounds such as 2,6 dimethylaniline, 2-methylaniline, 2-isopropylaniline, tolylamine, just to name a few examples that are not in the specification, employ the method of the present invention as claimed and enabled by the specification, and produce some useful imidazolium salts (such as 1,3 bis(2,6-dimethylphenyl)imidazolium, 1,3 bis(2-methylphenyl)imidazolium, 1,3 bis(2-isopropylphenyl)imidazolium and 1,3 bis(4-methylphenyl)imidazolium salts), without undue experimentation. Thus, the specification properly enables the claims.

Even if the rejection were proper as to some of the claims, it is certainly not proper as to claims 3, 4, and 18-20, which specifically mention **1** or **3** (specifically disclosed in the specification) as starting diimine compounds.

Claims 1-4, 6-12 and 15-20 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Jafarpour et al., J. Organometallic Chemistry, 2000, 606:49-54. Applicant respectfully traverses this rejection.

The method of Jafarpour et al. requires heating at elevated temperatures for long periods of time. The present invention as claimed is a room-temperature reaction which results in a product which can be obtained by simple filtration and collection, without requiring azeotropic distillation or recrystallization. It is much simpler than that of Jafarpour et al.

Jafarpour et al. discloses a more complicated method than that claimed. Jafarpour et al. does not disclose or suggest conducting the method at room temperature, a limitation present in all claims. Therefore, Jafarpour et al. does not render obvious the present invention.

While it might be desirable to optimize variables such as temperature, there is simply no suggestion in Jafarpour et al. that one can conduct the claimed process at room temperature. Jafarpour et al. simply does not render obvious the present invention.

Appl. No. 10/653,688
Response dated April 21, 2006
Reply to Office Action of Nov. 22, 2005

The present inventor is one of the authors of Jafarpour et al. The room temperature improvement of the present invention leads to a great increase in ease of synthesis and is an improvement of a protocol he first described in Jafarpour et al. No one had ever done this synthesis at room temperature before. Surprisingly and counter-intuitively, the purity of the material made at room temperature is improved as evidenced by yields and spectroscopic data. It is not obvious at all to do a reaction at lower temperature and get better results, especially in a reaction such as this that was thought to require fairly harsh conditions to proceed. The synthetic protocol of the present invention is a true discovery and warrants patent protection.

Claims 1, 19, and 20 were objected to. Applicant respectfully traverses this objection, and respectfully submits that no amendment of these claims is necessary.

Should the Examiner feel that a telephone conference would advance the prosecution of this application, he is encouraged to contact the undersigned at the telephone number listed below.

Applicant respectfully petitions the Commissioner for any extension of time necessary to render this paper timely.

Please charge any fees due or credit any overpayment to Deposit Account No. 50-0694.

Respectfully submitted,

/smn/
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